# CYIENT

# UAV-DRIVEN IMAGE ASSISTED INSPECTION FOR ENHANCED EFFICIENCY

Optimize rail asset management across rolling stock, signaling and rail infrastructure with our image-assisted inspection capabilities
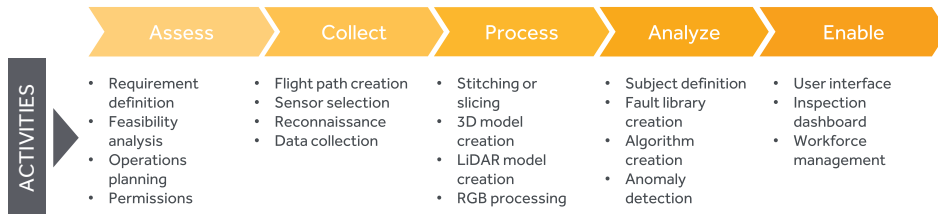
Accurate and readily available inspection data is critical for effective asset management in rail. The need for safer and more efficient inspection of railway assets is steering companies to consider a range of emerging digital techniques. Image-based inspection through UAVs (unmanned aerial vehicles) helps to significantly optimize labor-intensive and potentially unsafe human inspection.

Leveraging UAVs to capture high-quality images allows easy access to the hard-to-reach surface area and terrain while reducing the need for manual inspections in places where the hazard of moving trains is imminent. However, the true business benefit of image-based inspection techniques can only be realized through intelligent fault detection models making them more efficient.

## Integrated Solution for Image Capture and Processing

Cyient's Image Assisted Inspection (IAI) solution comprises of data collection services using UAVs, advanced image analytics of the captured data to generate reports and development of inspection dashboards for key insights. This solution enables clients to achieve their core operational objectives across all segments in the rail industry — rolling stock, signaling and infrastructure.

Cyient's IAI solution spans the complete value chain — from requirement identification to image capture processing and analytics. The solution can be integrated with any pre-existing image-assisted inspection technique (irrespective of its data collection method) to enhance efficiency and generate dashboards and insights. The end-to-end value chain of our Image Assisted Inspection solution is shown below:

| Assess | Collect | Process | Analyze | Enable |
|---|---|---|---|---|
| • Requirement definition<br>• Feasibility analysis<br>• Operations planning<br>• Permissions | • Flight path creation<br>• Sensor selection<br>• Reconnaissance<br>• Data collection | • Stitching or slicing<br>• 3D model creation<br>• LiDAR model creation<br>• RGB processing | • Subject definition<br>• Fault library creation<br>• Algorithm creation<br>• Anomaly detection | • User interface<br>• Inspection dashboard<br>• Workforce management |

*ACTIVITIES*

## The Cyient Edge

The triad of our strong capabilities — image-assisted data acquisition, data analytics and rail domain expertise make Cyient's IAI a unique and advanced solution. This combination allows us to gather data, extract information from it and eventually develop intelligence that enables informed business decisions.

**Data Acquisition Capabilities:** Cyient has a host of rotary blades and fixed-wing UAVs along with multiple RGB, multispectral, LiDAR and thermal sensors, and various data acquisition and processing tools, to cater to a diverse set of requirements and provide solutions leveraging best-in-class technology and industry standards.

**Data Analytics Experience:** Our in-house team of experienced data analysts leverages the power of machine learning to build analytics solutions that help you garner insights and make better business decisions. Our in-house platform can be leveraged for creating anomaly detection models based on captured and processed images, and providing intelligence on the faults.

**Rail Domain Expertise:** Our rich domain knowledge, owing to 15+ years and 17+ million hours of experience across rolling stock and signaling assets enables us to understand key operational challenges involved in asset inspection and develop a solution customized to meet your requirement.

| Increased Safety | Increased Operational Efficiency | Reduced Cost |
|---|---|---|
| • By reducing risk to inspection personnel and public<br>• By enabling access to hard-to-reach places and areas | • By reducing service disruption<br>• By ensuring process consistency<br>• By capturing data accurately<br>• By providing effective data analysis | • By optimizing efforts and resources<br>• By lowering personnel insurance expense<br>• By ensuring low specialized equipment cost |

## Contact Us

### North America Headquarters

Cyient, Inc.
99 East River Drive
5th Floor
East Hartford, CT 06108
USA
T: +1 860 528 5430
F: +1 860 528 5873

### Europe, Middle East, and Africa Headquarters

Cyient Europe Ltd.
The Space Holborn
235 High Holborn
London WC1V 7LE
UK
T: +44 20 7404 0640
F: +44 20 7404 0664

### Asia Pacific Headquarters

Cyient Limited
Level 1, 350 Collins Street
Melbourne, Victoria, 3000
Australia
T: +61 3 8605 4815
F: +61 3 8601 1180

### Global Headquarters

Cyient Limited
Plot No. 11
Software Units Layout
Infocity, Madhapur
Hyderabad - 500081
India
T: +91 40 6764 1000
F: +91 40 2311 0352

cyient.com

COM_FL_UAV_OV_0219